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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,889	02/02/2001	Abdulrauf Hafeez	P12509-US1 SC	8806

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EXAMINER	
BURD, KEVIN MICHAEL	

ART UNIT	PAPER NUMBER
2631	8

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/773,889	HAFEEZ ET AL.	
	Examiner	Art Unit	
	Kevin M Burd	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,8-18,20-23 and 25-32* is/are rejected.

7)☒ Claim(s) *4-7,19 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. This office action, in response to the response filed 2/5/2004, is a final office action.

Response to Arguments

2. Applicant's arguments filed 2/5/2004 have been fully considered but they are not persuasive. Applicant states the prior art does not disclose determining the response of the receive filter. The examiner disagrees. Bottomley discloses it has become apparent that knowledge of the transmit and or receive filter responses (pulse shaping filter response) can be used to improve estimation of the composite channel response (column 4, lines 49-51). As stated in the previous office action, these filter response are a component of the composite channel response (column 4, lines 17-30). For these reasons and the reasons stated in the previous office action, Bottomley discloses calculation of a pulse shaping filter impulse response as well as the other components of the rejected claims. The rejections of the claims are maintained and stated below.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 10/28/2003 have been considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 8-17, 20-23 and 27-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Bottomley et al (US 5,889,827).

Regarding claim 1, Bottomley discloses a system comprising a pulse-shaping filter (abstract and column 2, lines 11-27). The pulse-shaping filter receives symbols that are known (training symbols) (column 8, line 56 to column 9, line 13). The filtered signal is mixed down to base band and sampled (column 1, lines 51-55). The samples are used to determine the transmission medium response as well as the response associated with the receive filter (column 4, lines 17-30).

Regarding claim 2, the pulse-shaping filter is a transmit pulse shaping filter, a receive pulse-shaping filter or both (column 4, lines 17-30).

Regarding claim 3, Bottomley discloses the received symbols are known in the receiver (column 4, lines 17-30).

Regarding claim 8, the receiver of figure 1 is a mobile unit (column 1, lines 9-17).

Regarding claim 9, the error is calculated, squared and used to correct the receiver (column 2, lines 1-10).

Regarding claim 10, Bottomley discloses using updated coefficients for demodulating the received symbols (column 4, lines 17-38).

Regarding claim 11, Bottomley discloses a method for calculating the medium response (impulse response) and the response of the receive filter (column 4, lines 17-30). The method comprises receiving the signal, mixing the signal to base band, sampling the signal (column 1, lines 51-55). A response of the filter is measured (column 4, lines 17-30).

Regarding claim 12, the system can be used in a TDMA system (column 1, lines 26-33).

Regarding claim 13, Bottomley discloses the received symbols are known in the receiver (column 4, lines 17-30).

Regarding claim 14, Bottomley discloses using updated coefficients for demodulating the received symbols (column 4, lines 17-38).

Regarding claim 15, the recovered signal is the output of the demodulator.

Regarding claim 16, every pulse-shaping filter is adjusted during manufacturing process.

Regarding claim 17, calculating the response of the filter is done in the demodulation process (column 4, lines 17-30).

Regarding claims 20, 28, 30 and 31, Bottomley discloses a system comprising a pulse-shaping filter (abstract and column 2, lines 11-27). The pulse-shaping filter receives symbols that are known (training symbols) (column 8, line 56 to column 9, line 13). The filtered signal is mixed down to base band and sampled (column 1, lines 51-55). The samples are used to determine the transmission medium response as well as the response associated with the receive filter (column 4, lines 17-30). A channel

estimation is done to calculate coefficients (column 4, lines 17-30) and Bottomley discloses using updated coefficients for demodulating the received symbols (column 4, lines 17-38).

Regarding claims 21 and 29, the pulse-shaping filter is a transmit pulse shaping filter, a receive pulse-shaping filter or both (column 4, lines 17-30).

Regarding claim 22, Bottomley discloses the received symbols are known in the receiver (column 4, lines 17-30).

Regarding claim 23, the system can be used in a TDMA system (column 1, lines 26-33).

Regarding claim 27, the receiver of figure 1 is a mobile unit (column 1, lines 9-17).

Regarding claim 32, the error is calculated, squared and used to correct the receiver (column 2, lines 1-10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bottomley et al (US 5,889,827) in view of Schollhorn (US 6,438,567).

Regarding claim 18, Bottomley discloses the method stated above in paragraph 4. Bottomley does not disclose an interpolator for increasing the effective sampling rate. Schollhorn discloses using an interpolator to increase an effective sampling rate for an impulse response of a filter (column 2, lines 32-47). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the interpolator of Schollhorn in the method of Bottomley. By increasing the effective sampling rate, the precision is increased since more samples are taken.

6. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bottomley et al (US 5,889,827).

Regarding claim 25, Bottomley discloses the system stated above in paragraph 4. Bottomley does not disclose a synchronizer for synchronizing the sampler and the pulse-shaping filter. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to synchronize all the components of the receiver to one another. The circuit speed would be increased since each downstream device would be prepared to process the output of the upstream elements at the appropriate time.

Regarding claim 26, Bottomley further discloses receiving the signal, mixing the signal to base band, sampling the signal (column 1, lines 51-55).

Allowable Subject Matter

7. Claims 4-7,19 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any response to this final action should be mailed to:

Box AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications; please mark "EXPEDITED PROCEDURE" or for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703) 308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 6:00 PM.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Kevin M. Burd
PATENT EXAMINER
4/16/2004

KHAI TRAN
PATENT EXAMINER